



FSi
FACADE SYSTEMS INC.

Challenges in Midrise

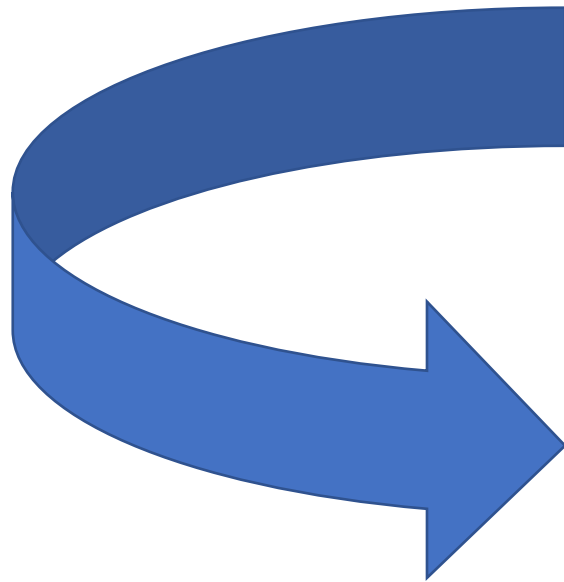
 **CERACLAD**
Rain Screen Exterior Siding System

Agent for Facades and Building Systems that are innovative, aesthetic, sustainable, constructible, affordable and proven

- Professional Engineer.
- Leader in engineered based businesses for 25+ years in three industries.
- Building industry since 2005.
- Clients tell me they appreciate the technical service.
- A testimony: *“You have always been an experienced voice in the world of facade materials, so we look forward to continued discussions on how we can realize our design objectives, from both an aesthetic and technical point of view.”*



How This Is Going To Work

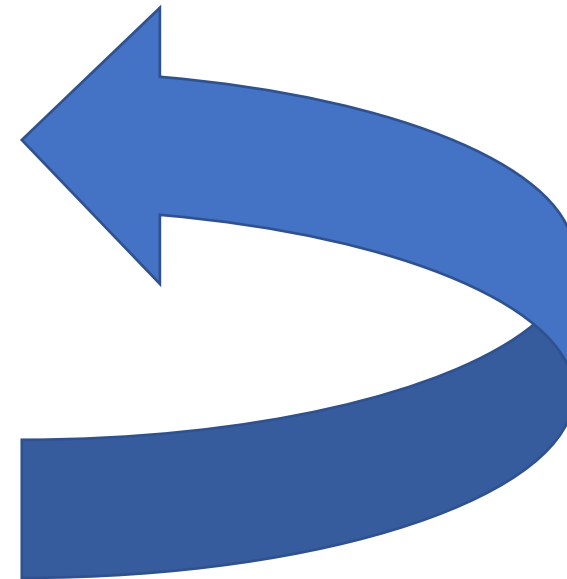


Content

Feedback

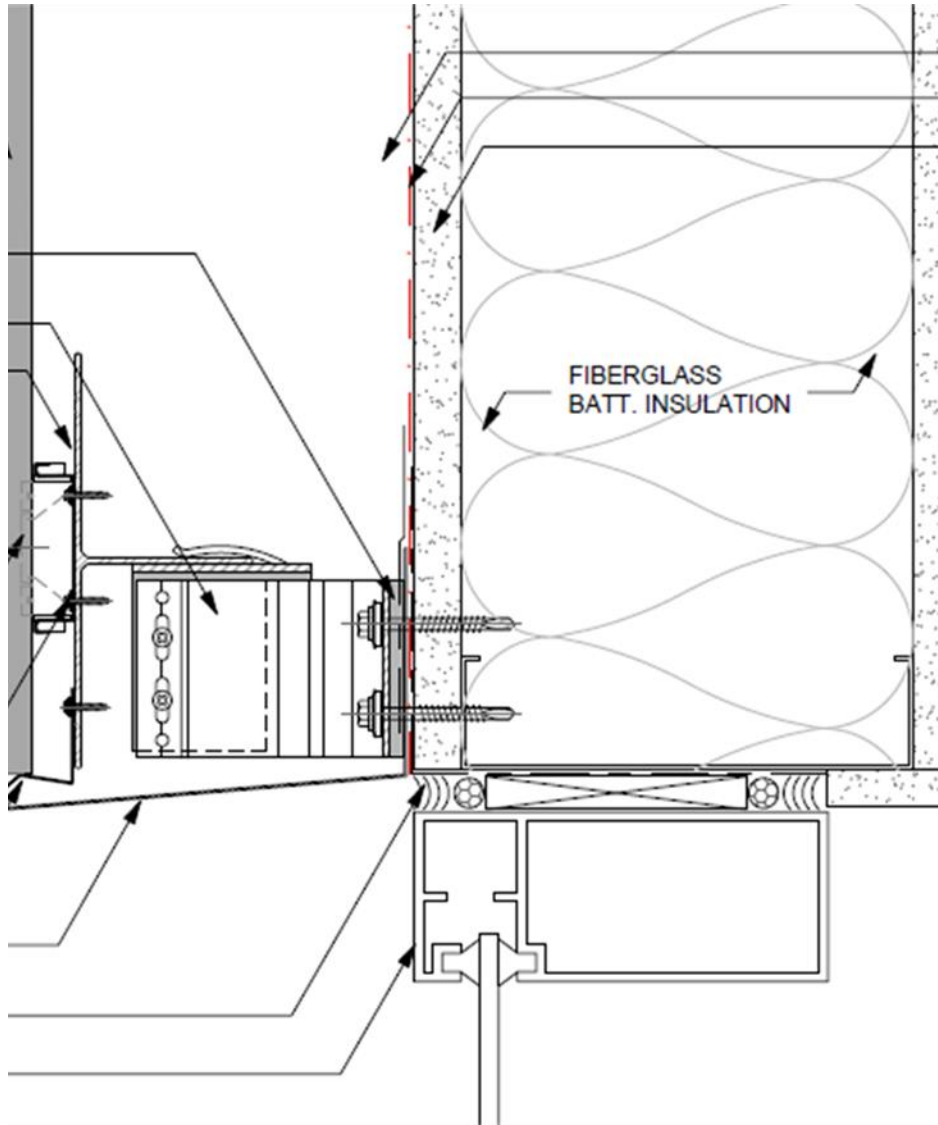
- Polls
- Comment Section
- Questions

Participation Points!



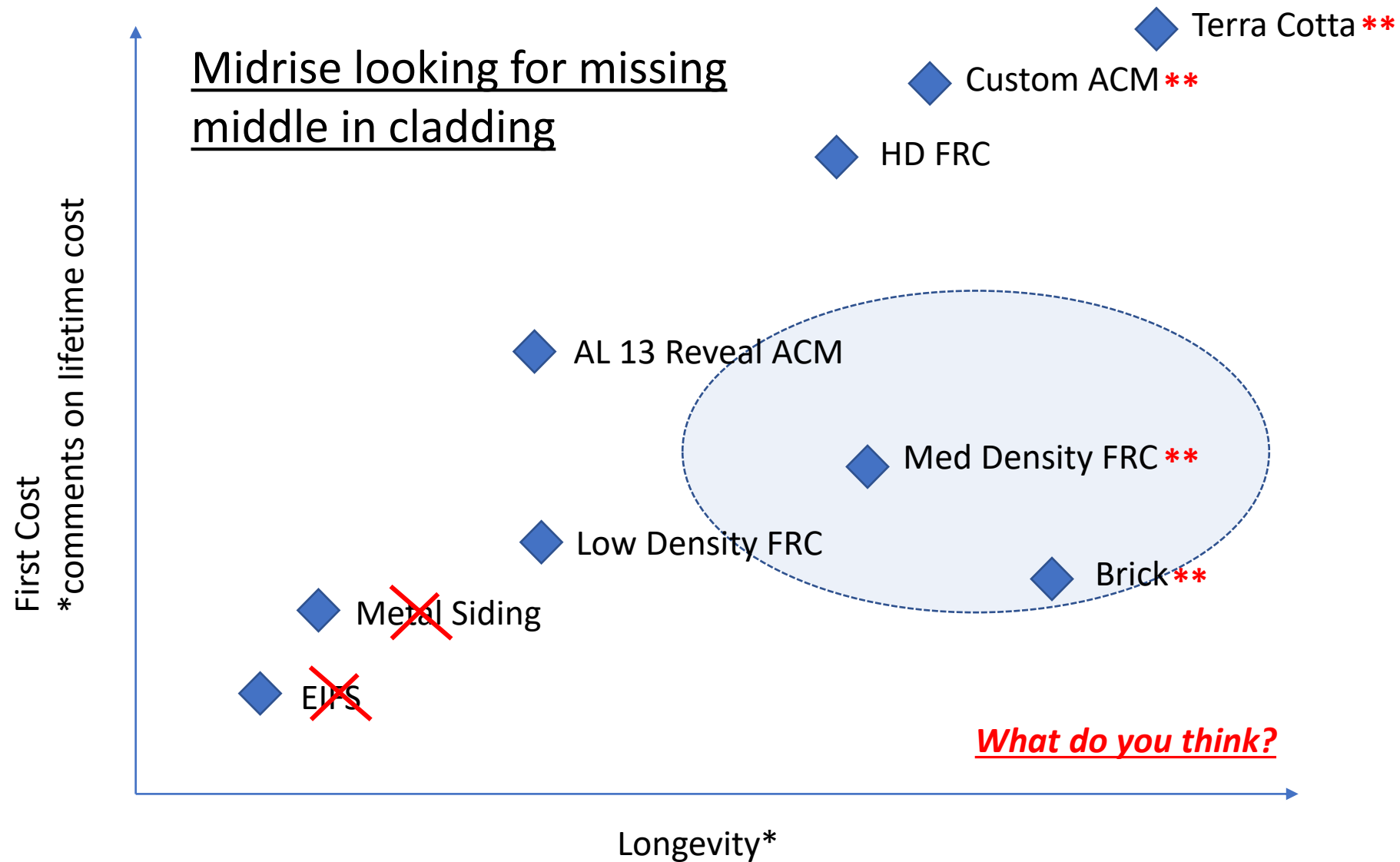


YOUR CHALLENGES – in COMMENT SECTION



Topics

- Façade positioning
- Criteria; synergy or trade-offs
- Ceraclad
 - Contents
 - Finishes = longevity
 - Aesthetics = choice
 - Sustainability
 - Cost = complexity
- Building Code



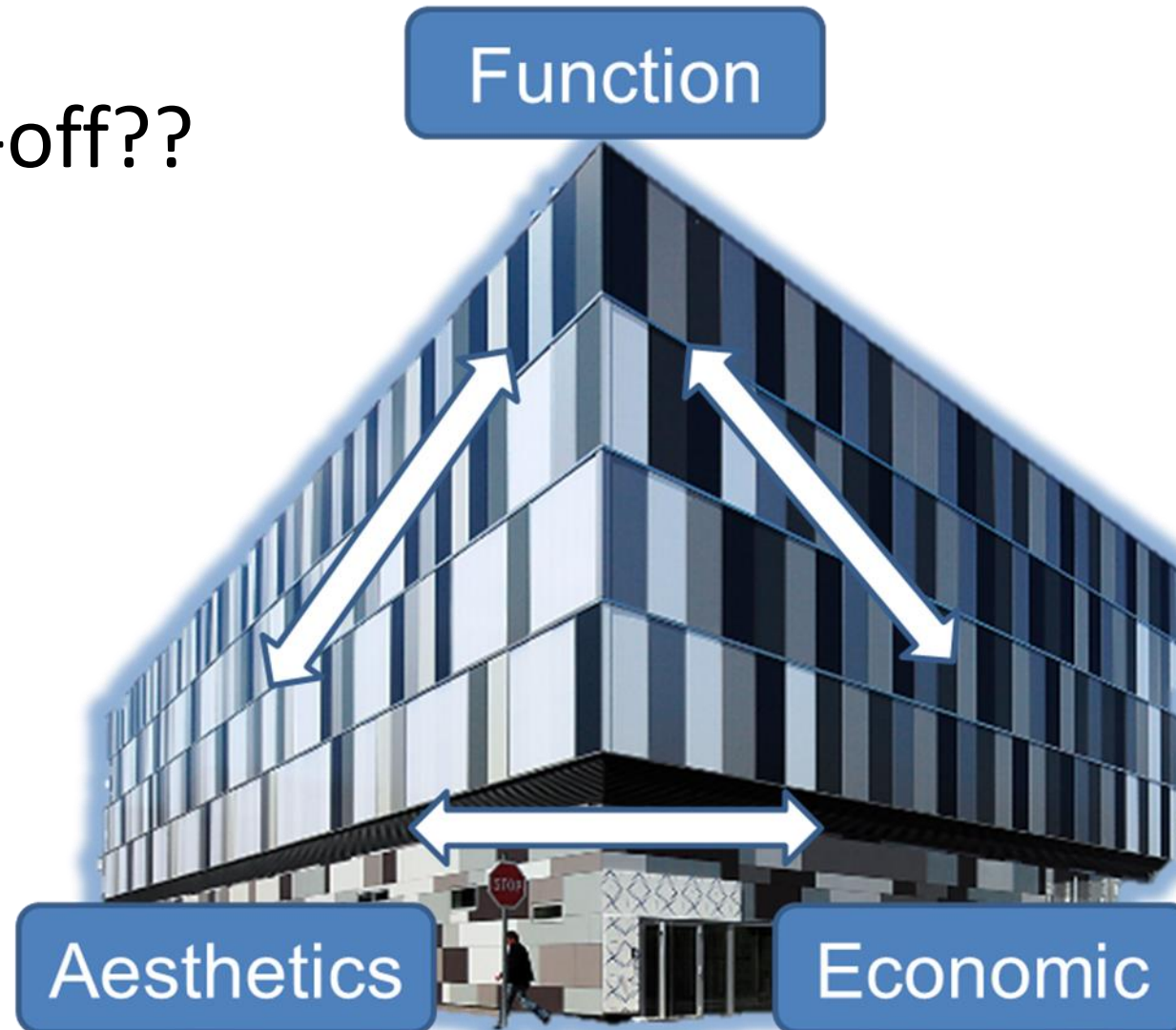
*Longevity, resilience, colour durability, physical durability = lower maintenance

**High Aesthetic Choice

What do you think?

Synergy or Trade-off??

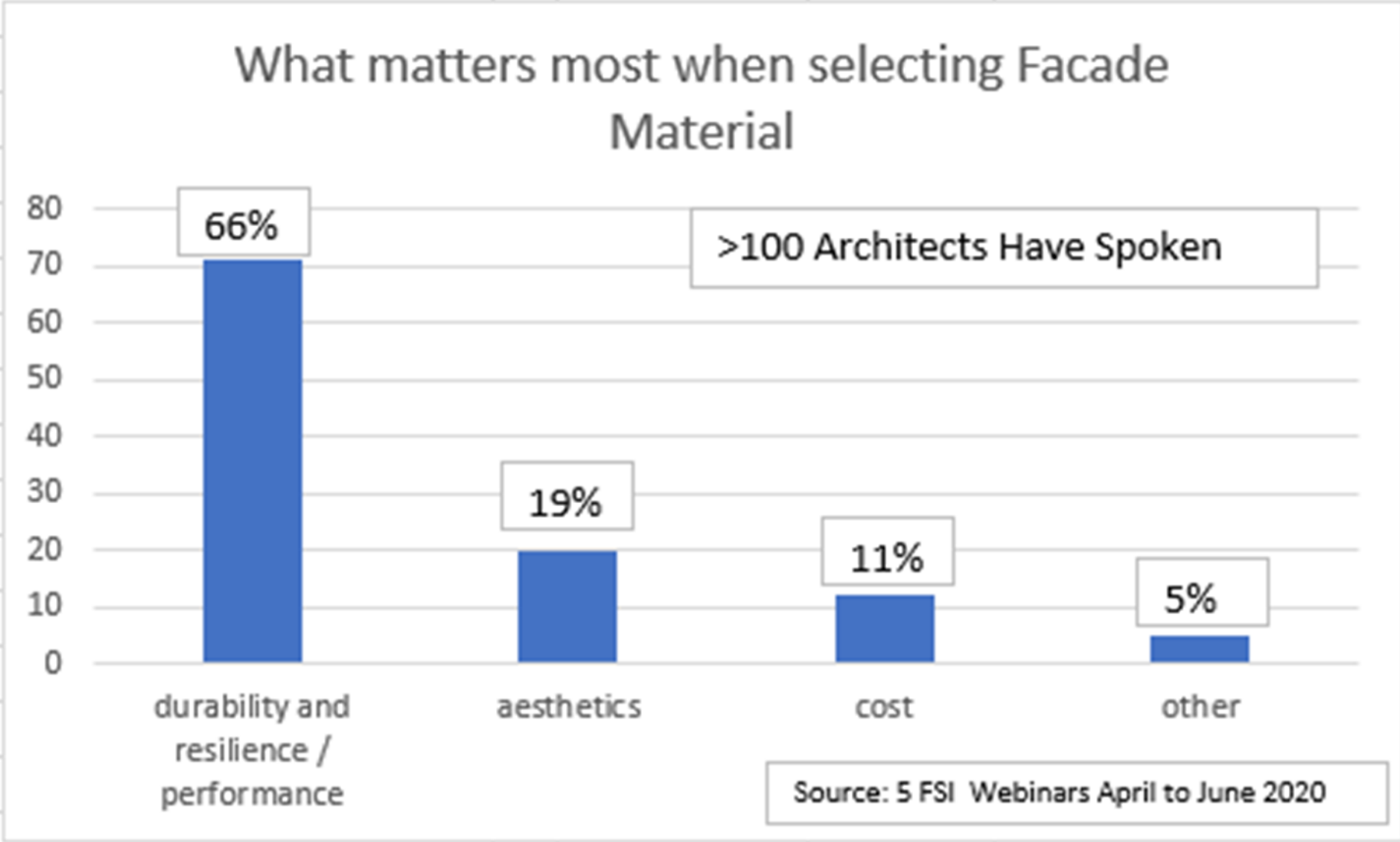
- Sustainability
- Company behind the product
- Installation speed
- Quality





POLL WHAT MATTERS TO YOU FIRST

- Performance
- Cost
- Aesthetics
- Sustainability attributes
- Company behind the product
- Contractor skill
- Other



Major Considerations
WHEN choosing an
exterior wall system

**Fiber Cement can
contribute in each
category!**

Performance

Aesthetics

Code Compliance

Sustainability

Budget

Durability



CERACLAD

Rain Screen Exterior Siding System



CERACLAD is a factory-finished fiber cement siding system suitable for new construction and retrofit projects.

Attachment ventilated curtain wall façade system with matching trim for corners.

Large panel size; all Panels are 10 feet x 18" with ship lap edges.

- ✓ Total Cost; material, installation, life.
- ✓ Aesthetic choices = curb appeal
- ✓ Health and Well being: ventilated façade
- ✓ Sustainability; Mindful Material
- ✓ Performance: Proven in tough freeze thaw conditions

Typical Fiber Cement Thicknesses

Lap Siding/Plank

5/16" |
8mm



Premium Medium Density Panel

5/8" |
16mm



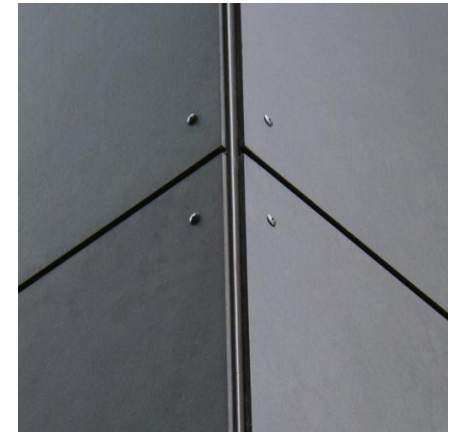
Typical Medium Density Panel

7/16" |
11mm



Typical High Density Panel

5/16" |
8mm





They Are Not All The Same

Low Density

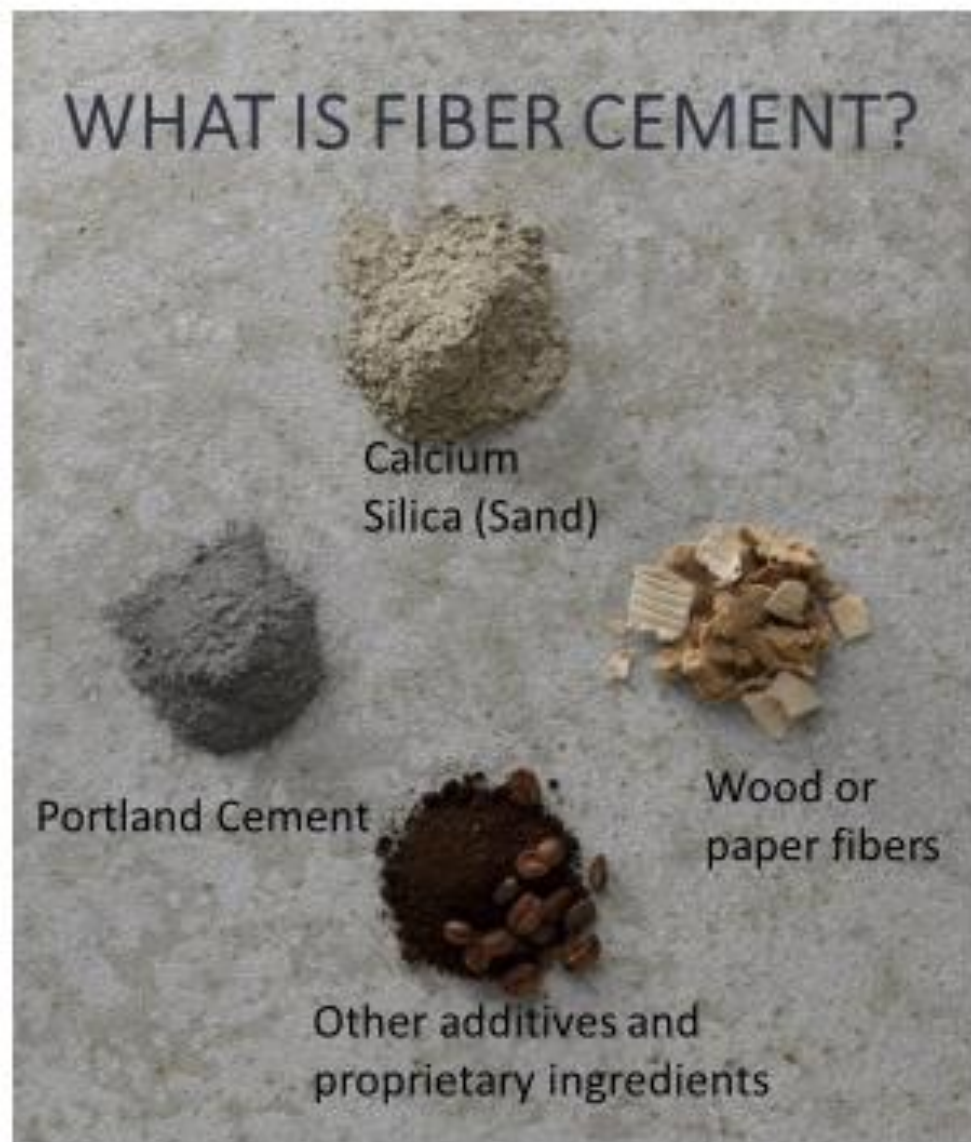
More fibrous material
Rougher cut edge
Usually commodity fiber cement (lap, trim, etc)

Medium Density

More cementitious
Cleaner cut edge
Can be cut with standard tools in the field

High Density

Highest concentration of cement
Usually requires fabrication + shop drawings
Premium product/price





Finishes = Longevity, Durability, Low Maintenance

Coatings Available for Fiber Cement

Coating	Consistent Factory Finish	Fade Resistance	Graffiti Resistance	Low Maintenance
Acrylic Paint (Field Painted)				
Acrylic Paint (Pre-finished)	✓			
Base Paint + Protective Clear coat	✓	✓		✓
Graffiti Resistant Coating	✓		✓	✓ ¹
Silicon Oxide UV Resistant Top Coat	✓	✓	✓	✓

1. Depending on the type of graffiti resistant coating, it may be more or less low maintenance. Sacrificial Coatings need to be reapplied every time they are cleaned of graffiti, where permanent or factory applied coatings may be effective for the service life of the cladding.

Finishes

Coatings: Graffiti Resistant



Two Kinds of Graffiti Resistant Coatings:

Sacrificial Coating

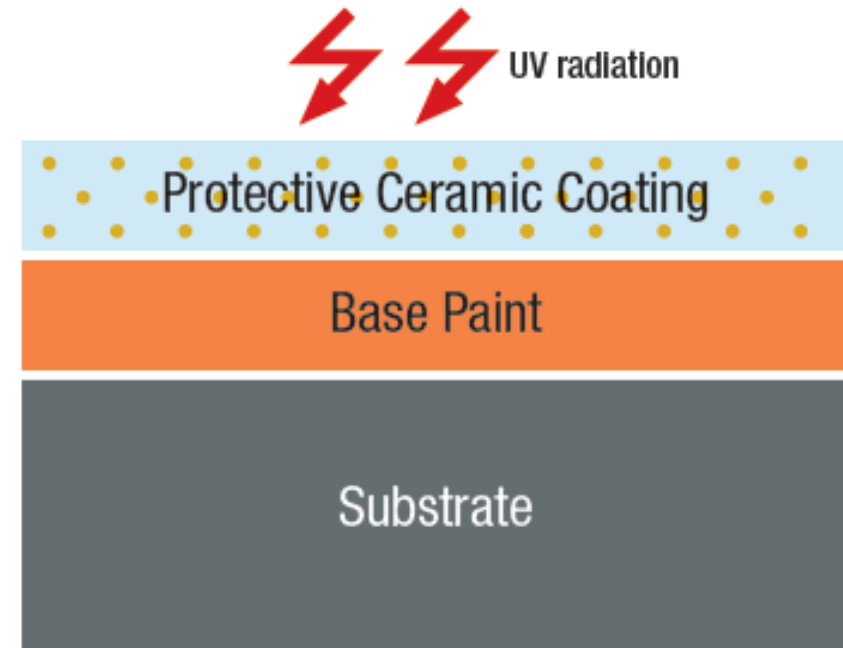
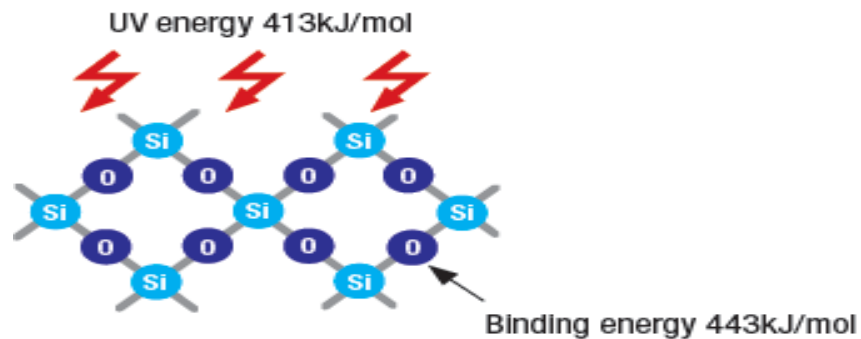
- Clear Polymer coating that is applied to the substrate and protects the material underneath
- Graffiti is removed with the coating (usually by high pressure washing)
- Coating is reapplied after removal
- Cheap, effective.
- Not low maintenance due to reapplication process
- Repetitive power-washing can damage material underneath

Permanent Coating

- Some manufacturers offer this as a factory coating option
- Many different types, but all act in the same way to repel water and oil
- If applied right, can be cleaned over and over

CERACLAD Ceramic Coated

- Standard color choices
- Prefinished in Japan
- UV blocking Ceramic coating protects finish and color



• UV absorber

The protective ceramic coating prevents the penetration of ultraviolet rays into the colored layer.

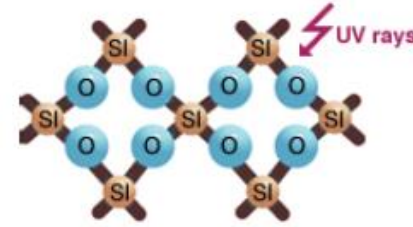
Finishes

Coatings: Silicon Oxide UV resistant coating

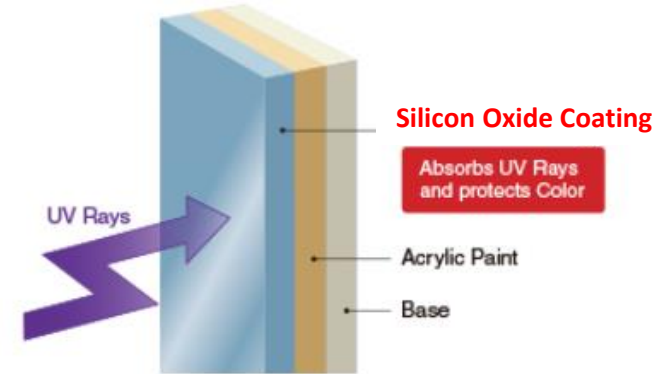
August, 2010



< Molecular bonds >



[No breaks of the bonds +
No penetration of UV rays]



May, 2017



Pros

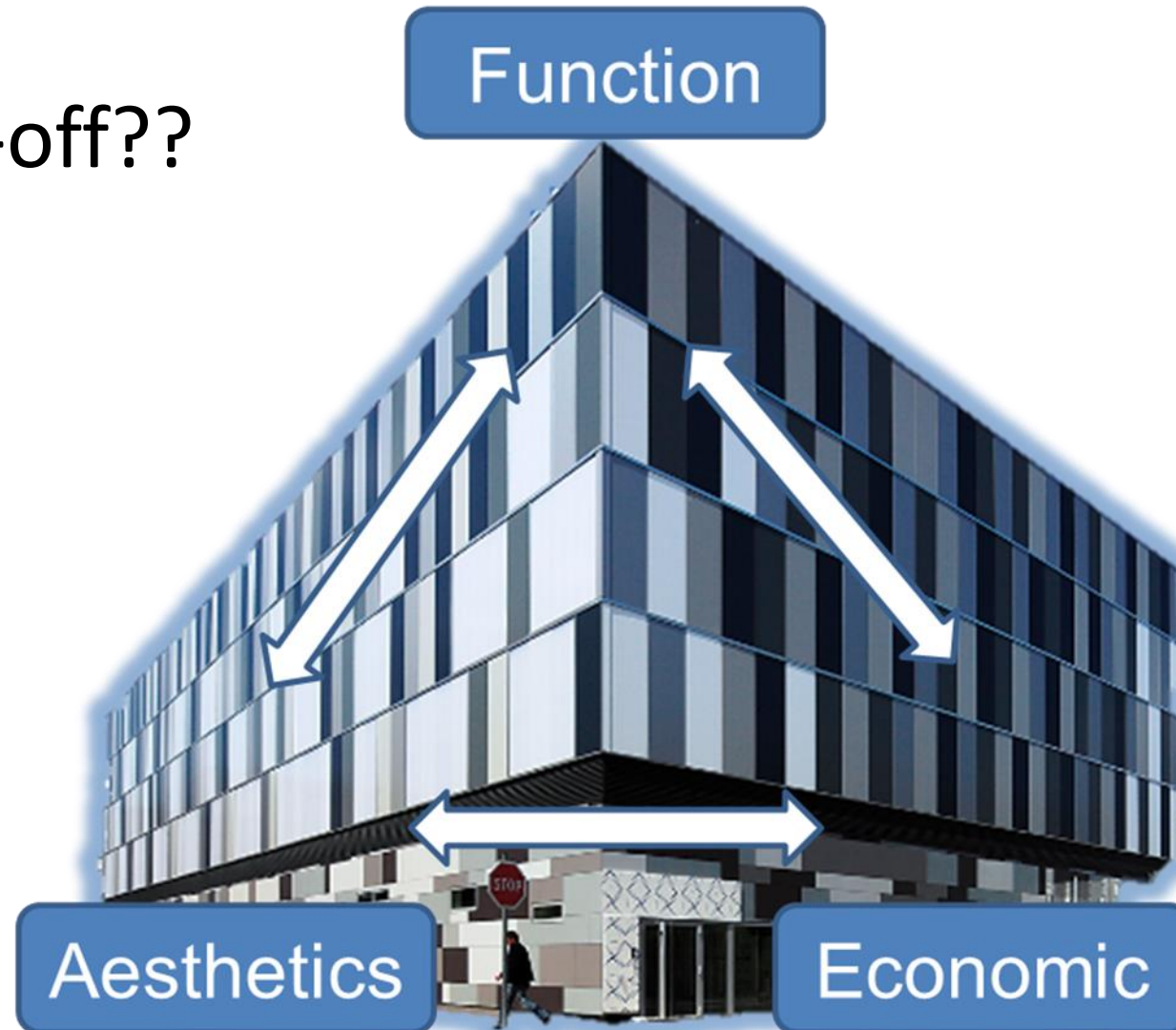
- Factory Coated
- Easy to clean
- UV Resistant, prevents color fade
- Requires minimal maintenance and repainting
- Graffiti resistant

Cons

- Not available from all manufacturers
- Requires high adhesion primer for re-coating

Synergy or Trade-off??

- Sustainability
- Company behind the product
- Installation speed
- Quality





What are you looking for in aesthetics?

- Colour
- Texture
- Layout
- Other



CERACLAD
Rain Screen Exterior Siding System



8 Reveal

Contemporary Smooth

Textured Stucco

Zen Garden

Cast Stripe

Rustic Wood

FIOTTO

Board Formed Concrete

FSI
FACADE SYSTEMS INC.



Job pix

27 North.
Stewart Howard Architects,
Tatla Developments,
Polestar Exteriors.







PROJECT PROFILE – BURNABY SOUTH SECONDARY



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PROJECT PROFILE – MARINE DRIVE SHOPPING CENTER



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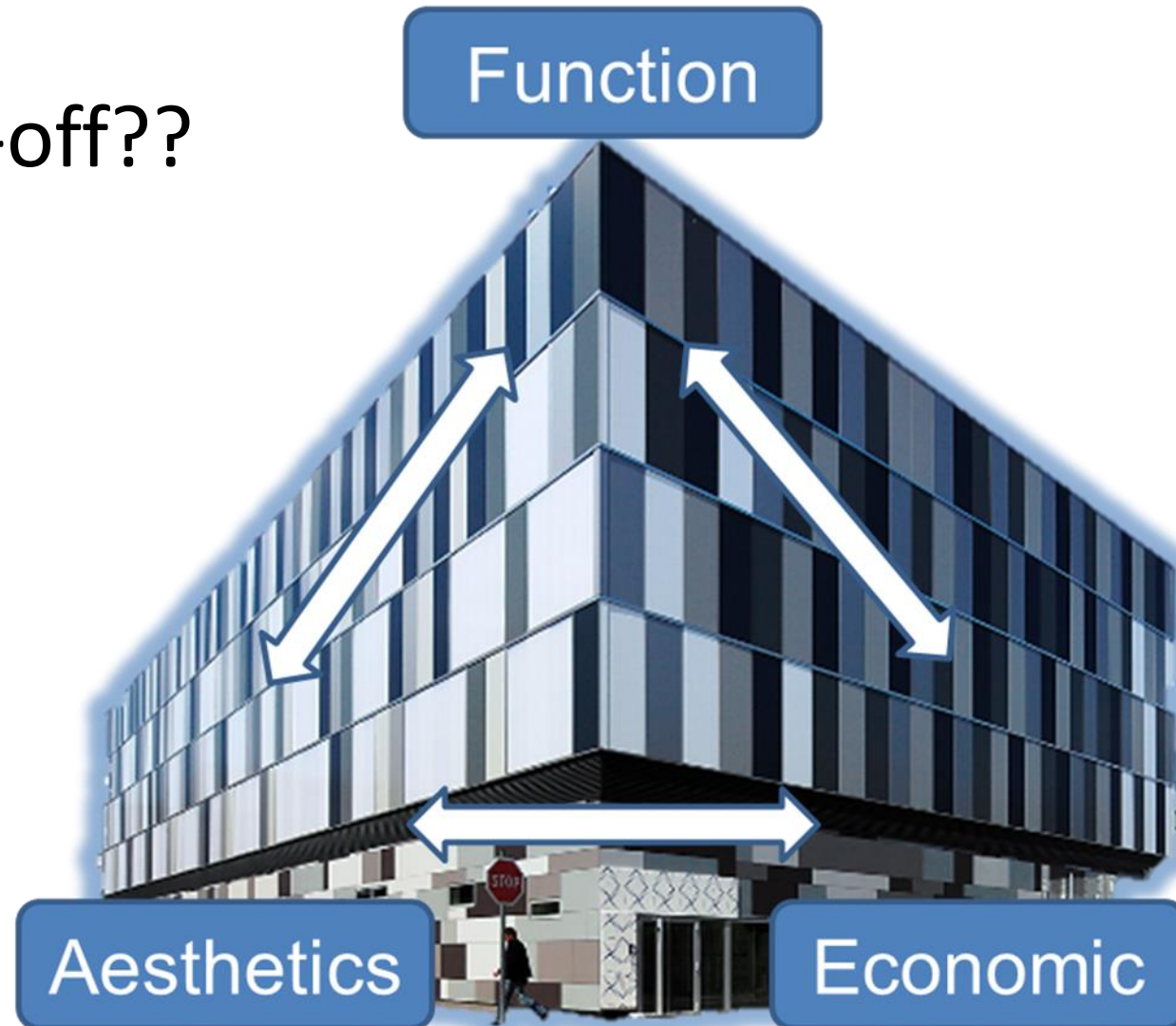




SUSTAINABILITY

Synergy or Trade-off??

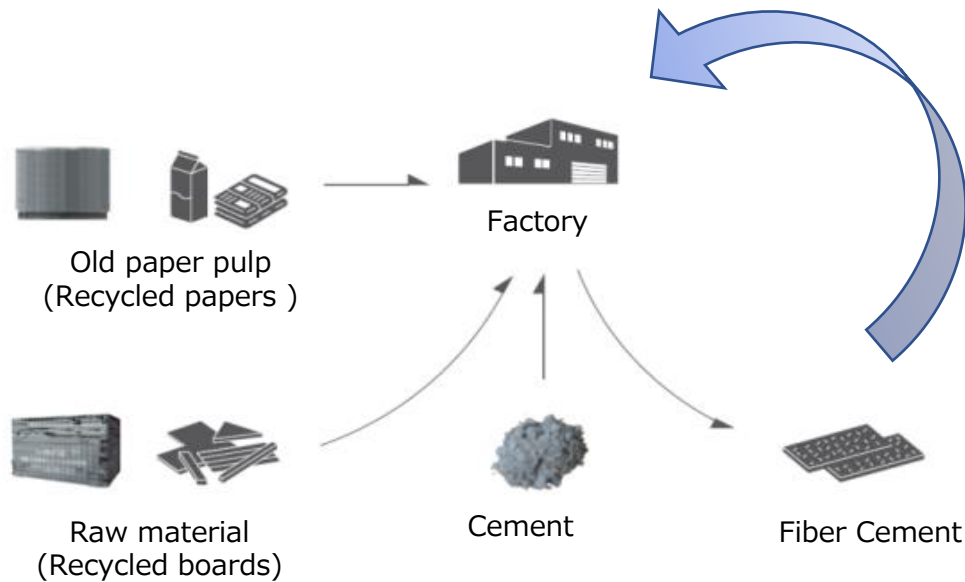
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SUSTAINABILITY

Fiber cement manufacturing process

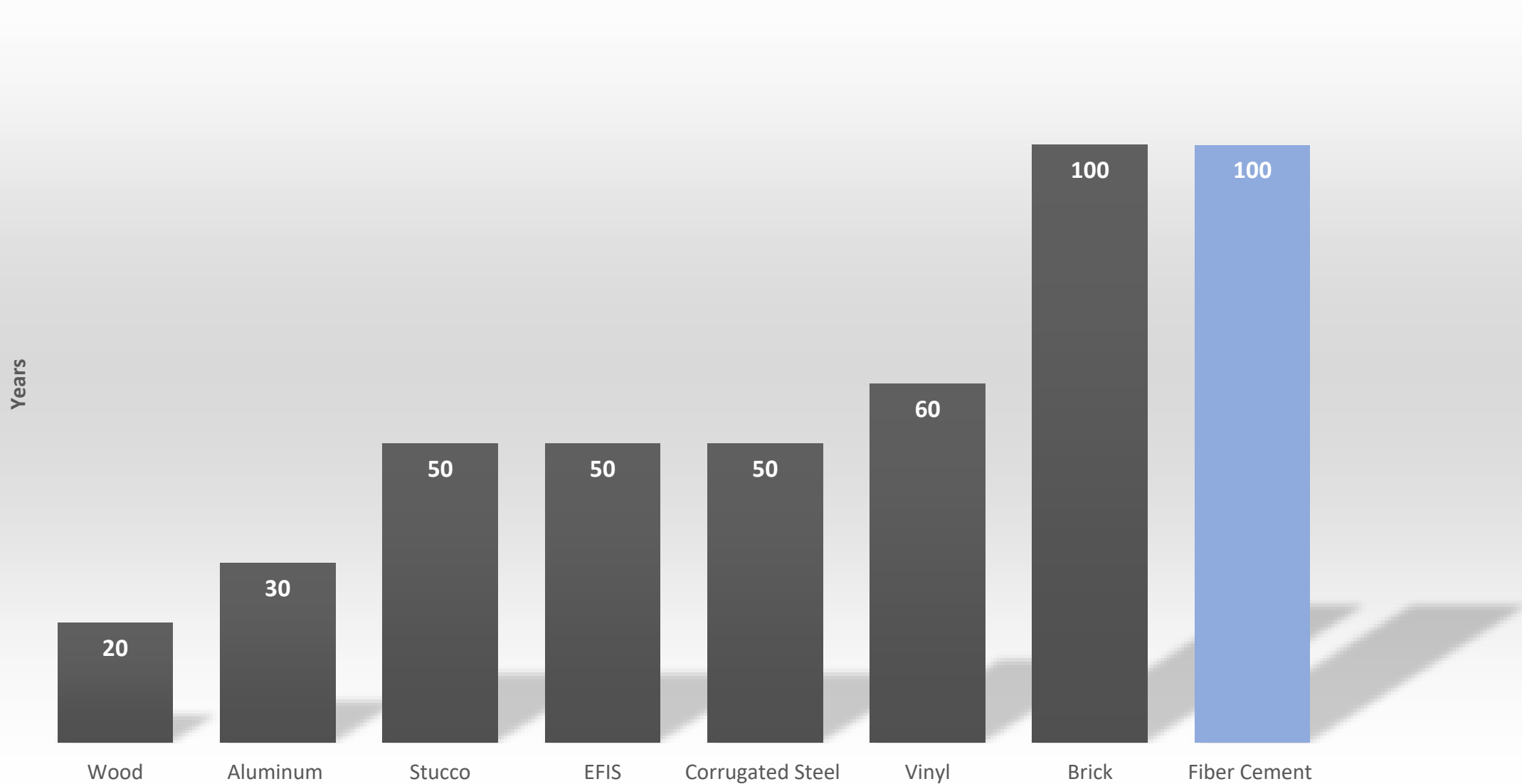


Fiber cement typically has anywhere from 30-60% recycled materials

A large percentage of the recycled content can be “post-consumer” recycled content, typically 8-22%

Some manufacturers also have takeback programs for construction scraps

Expected Service Life of Cladding materials





EVALUATION CENTER

INTERTEK TESTING SERVICES NA LTD.
1500 BRIGANTINE DRIVE
COQUITLAM, BC V3K 7C1

RENDERED TO

KUBOTA MATSUSHITADENKO EXTERIOR WORKS, LTD. (KMEW)
13F CRYSTAL TOWER, 1-2-27 SHIROMI
CHUO-KU, OSAKA, 540-6013, JAPAN

PRODUCT EVALUATED: Ceraclad 'E' 6 ft. and Ceraclad 'E' 10 ft.
EVALUATION PROPERTY: Performance Testing

Report of Ceraclad 'E' 6 ft. and Ceraclad 'E' 10 ft. for compliance with the majority of requirements of the following criteria: ICC-ES AC 90, *Acceptance Criteria for Fibre Cement Siding used as Exterior Wall Siding*

ASTM1185 comprehensive certification for fibre cement panels, including freeze / thaw. Ceraclad surpasses test significantly and offers 50 year warranty.

4.9. FROST RESISTANCE (FREEZE THAW)

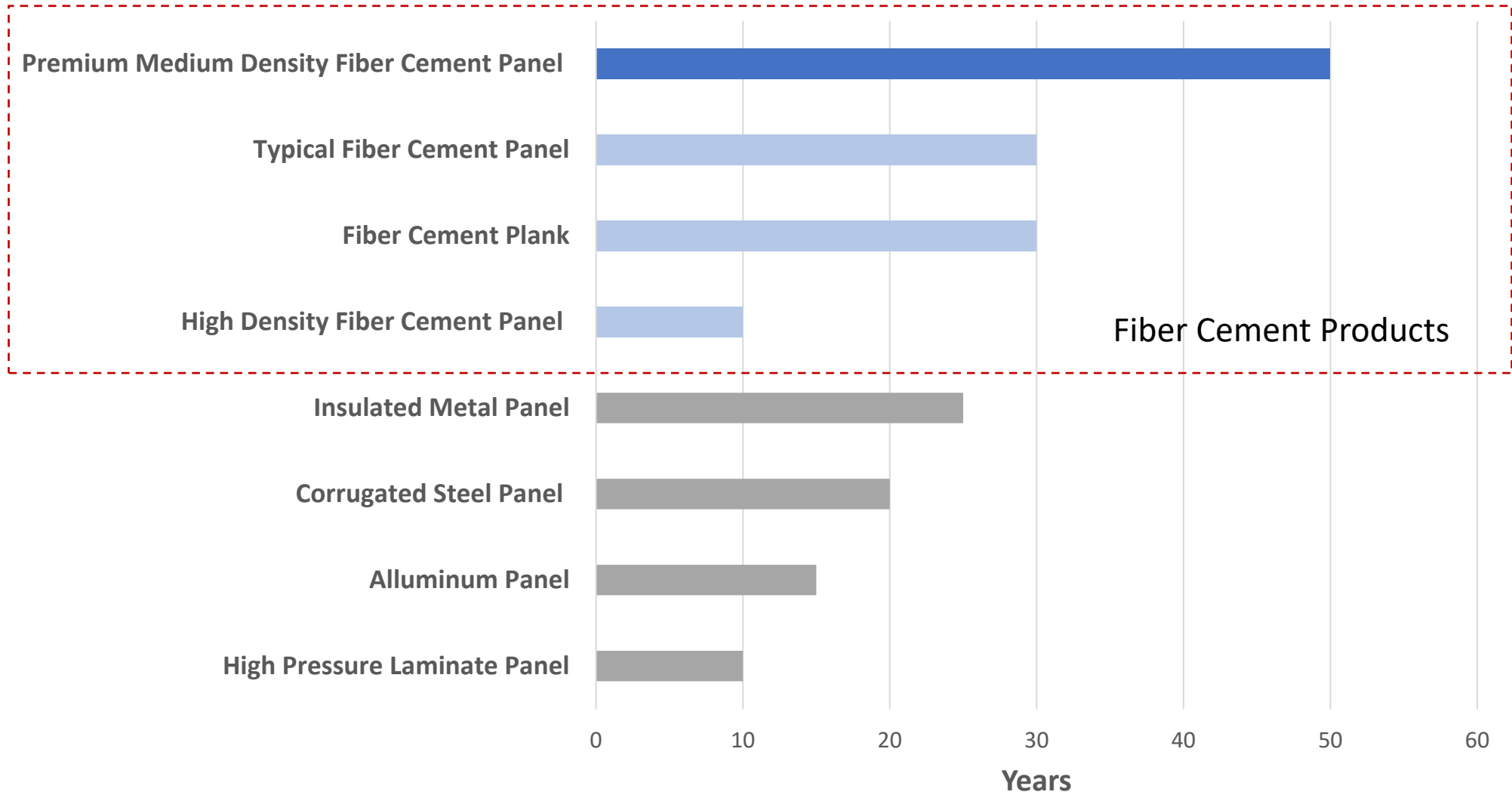
A minimum of five 4 in. × 12 in. (101 mm × 305 mm) specimens were subjected to 50 cycles of freeze/thaw as specified in ASTM C 1186-02, and ASTM C 1185-03. The material was initially immersed in water at a temperature of 41°F (5°C) for a minimum of 48 hours. The specimens were then packaged individually into plastic bags and cycled as follows:

- Cooling to $-4 \pm 4^{\circ}\text{F}$ ($-20 \pm 2^{\circ}\text{C}$) during a time of between 1 and 2 hours, then holding at this temperature for 1 hour.
- Thawing to $68 \pm 4^{\circ}\text{F}$ ($20 \pm 2^{\circ}\text{C}$) during a time of between 1 and 2 hours, then holding at this temperature for 1 hour.

During weekends and holidays, the freeze/thaw process was suspended by holding the specimens in standard laboratory conditions. At the completion of 50 cycles, a visual examination was performed to check for signs of cracking, delamination, or other physical changes. Prepared specimens of the examined material were later subjected to flexural testing.



Typical Product Warranties, Cladding Materials



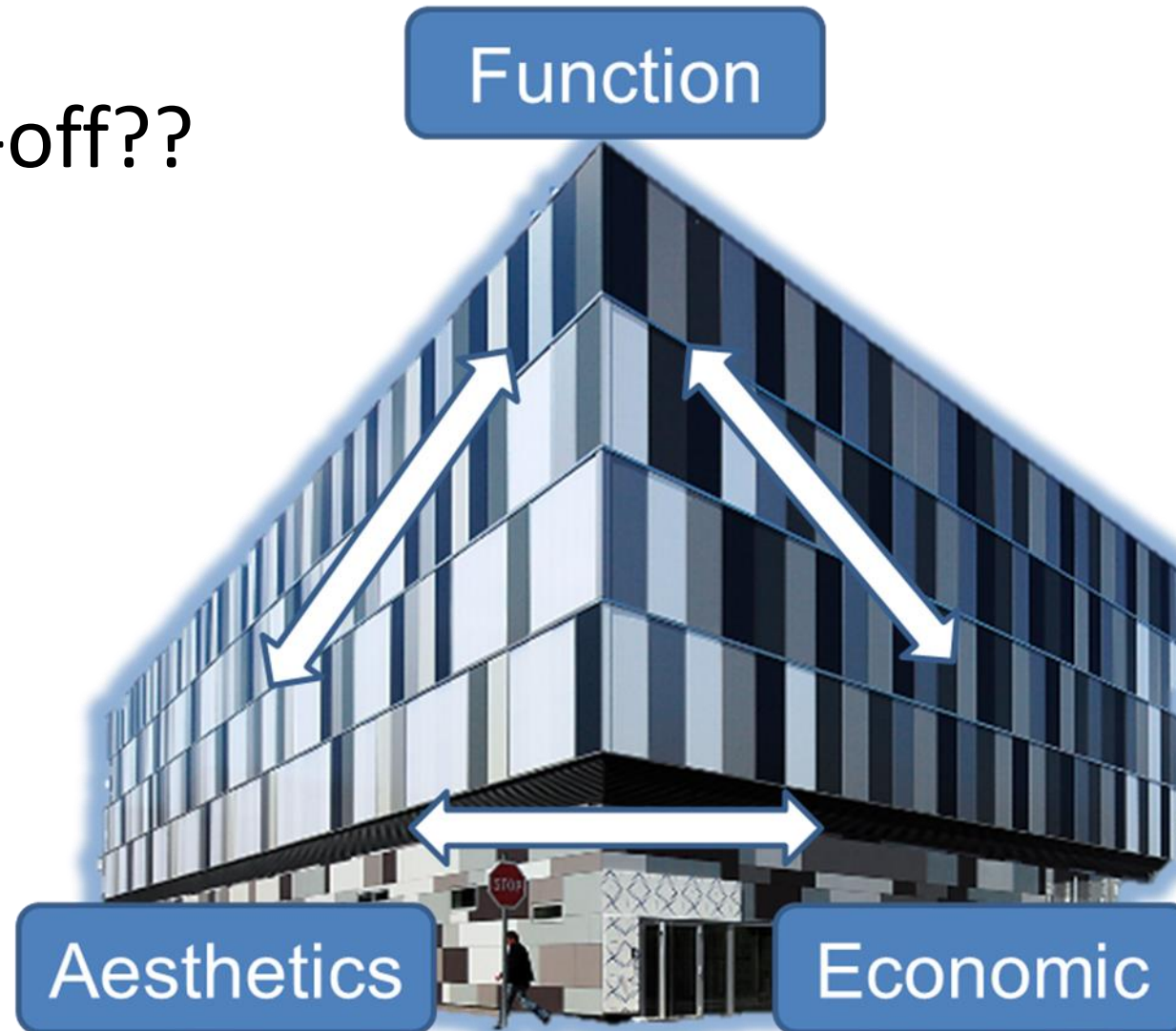
Other Sustainability Contributions

- Prefinished fiber cement reduces VOC exposure at the jobsite
- Fiber Cement typically doesn't contain any ingredients on the "Red List", like PVC, Lead, or Asbestos
- Compatibility with continuous exterior insulation systems
- Can contribute to LEED v4 in Materials and Resources (MR) category



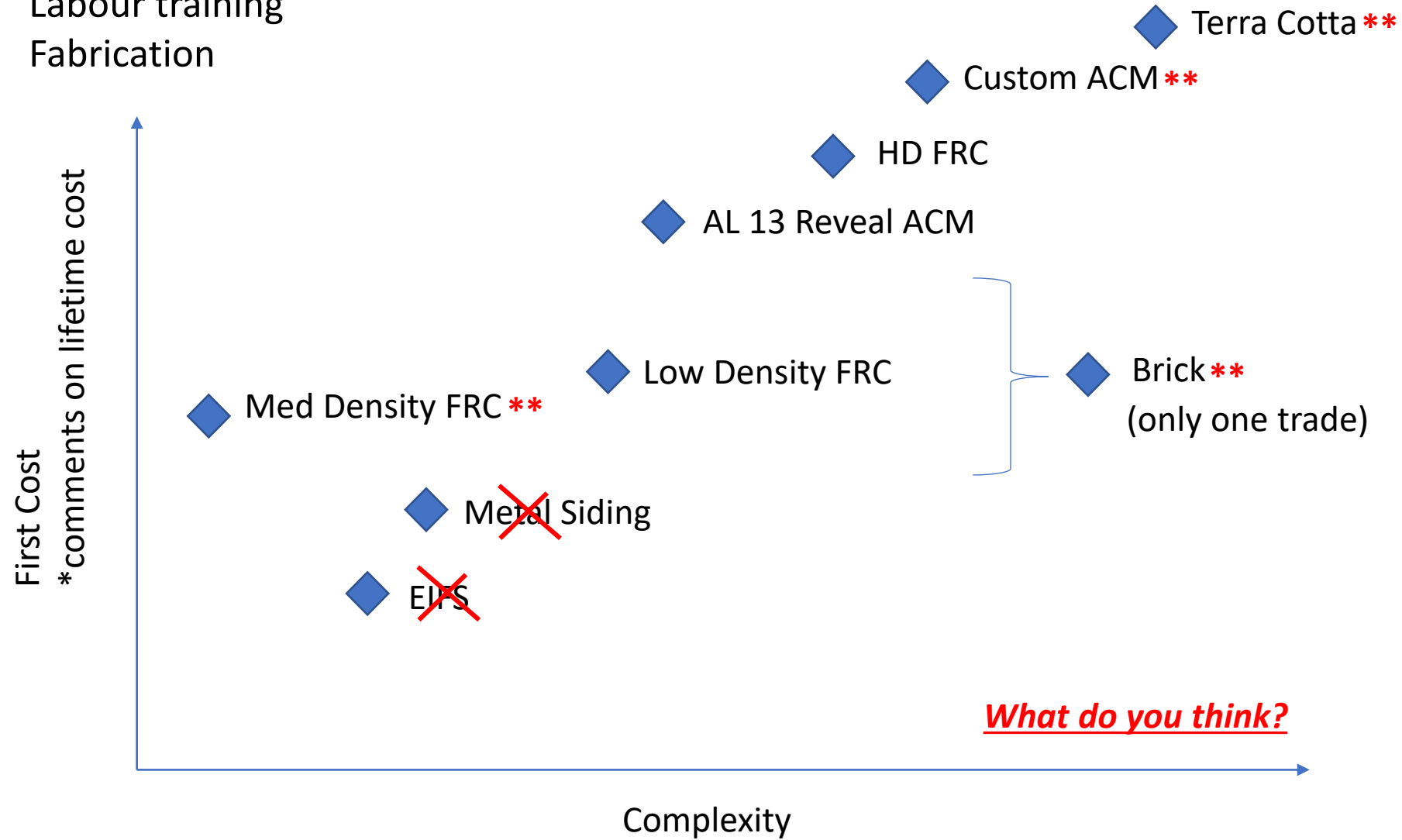
Synergy or Trade-off??

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- Company behind the product
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- Quality

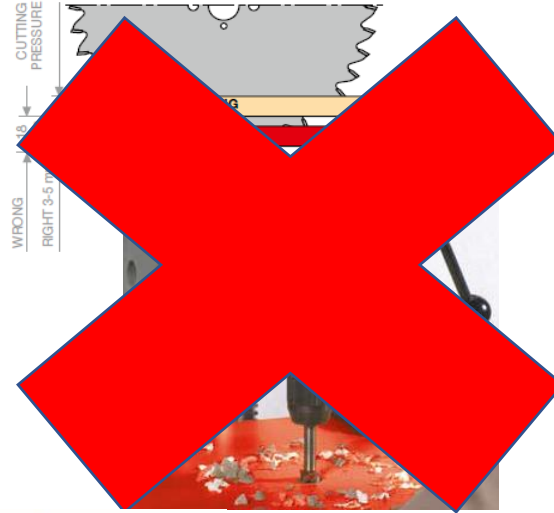


Drivers of Cost

- Complexity
 - Labour training
 - Fabrication



Systems vs Panels

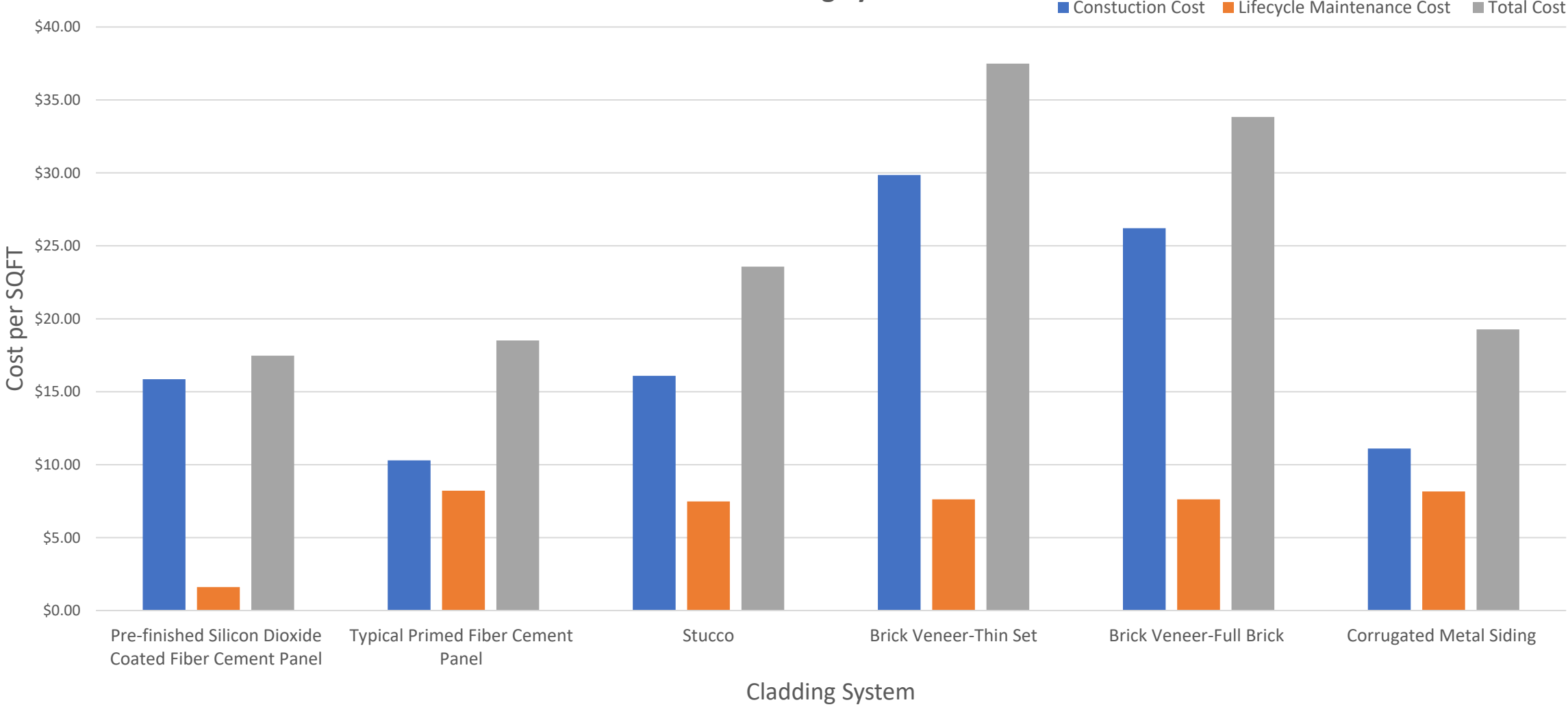


Systems

- Clips
- Rails, trims, corners
- Implied alignment and attachment.
- Little need for shop drawings.
- Site fabrication, site fit straight forward.



Lifetime Cost Comparison of Selected Cladding Systems



Calculations done by a professional construction cost and estimating consultant
Based on a 4 story multifamily building located in the Pacific Northwest. 30 year time frame.

Consider single source siding system



Engineered Clips attach the ship lap edge for hidden fastener system.

COST EFFECTIVE- Ceraclad System

- Hidden fastening system
- Factory Finished
- Large Panel Size
- Field Fabrication
- Installed system cost is usually between \$25-\$27

Completion: Q'1, 2014

Photo Taken: Q'3, 2017

Texture: Smooth Linen, Slate

System Type	Installed Cost	Maintenance Cost	Lifetime Cost
CERACLAD	Base Line	Base Line	Base Line
Lap Siding	-33%	+507%	+10%
Stucco	+7%	+462%	+39%
Brick Veneer	+95%	+470%	+220%
Full Brick	+71%	+470%	+200%
Corrugated	-28%	+503%	+14%



Ways to Reduce Initial and Lifetime costs with Fiber Cement

- Choose a Pre-finished product with a durable protective coating
- Medium density product typically have longer warranties, don't require shop drawings or fabrication, and have high durability
- Consider panel size in design of panel layout to reduce waste
- Specify metal trim instead of caulk joints
- Specify a single source rain screen system instead of buying panels, rainscreen accessories and fasteners separately





Design and Specification – lessons learned

Right amount of detailing, not too much. Keep ownership of assembly in installation contractor's hands

- Good Spec
 - Include HPD, EPD
 - Years of experience for product and installer >5
- Wall thickness, cross section
- Preferred conditions
 - Top and bottom of wall, be sure to have ventilation.
 - Windows and doors
 - Parapet
- Layout – let us discuss.
 - Panel optimization.
- Show and / or specify preferred substructure – **do not dimension.**



Building Codes (Lagging or leading function?)

- **Part 3 Buildings**

- Codes about combustibility only. CAN ULC S114 = non-combustible.
- Structure calculated by engineer during stamped shop drawing process. Mitigates Architect's liabilities.
- Thermal behavior defined in subsystem design.
- Freeze thaw, UV, impact, etc durability function of specification.
- GWP, EPD, HPD function of leadership* and local codes eg Toronto Green Standard

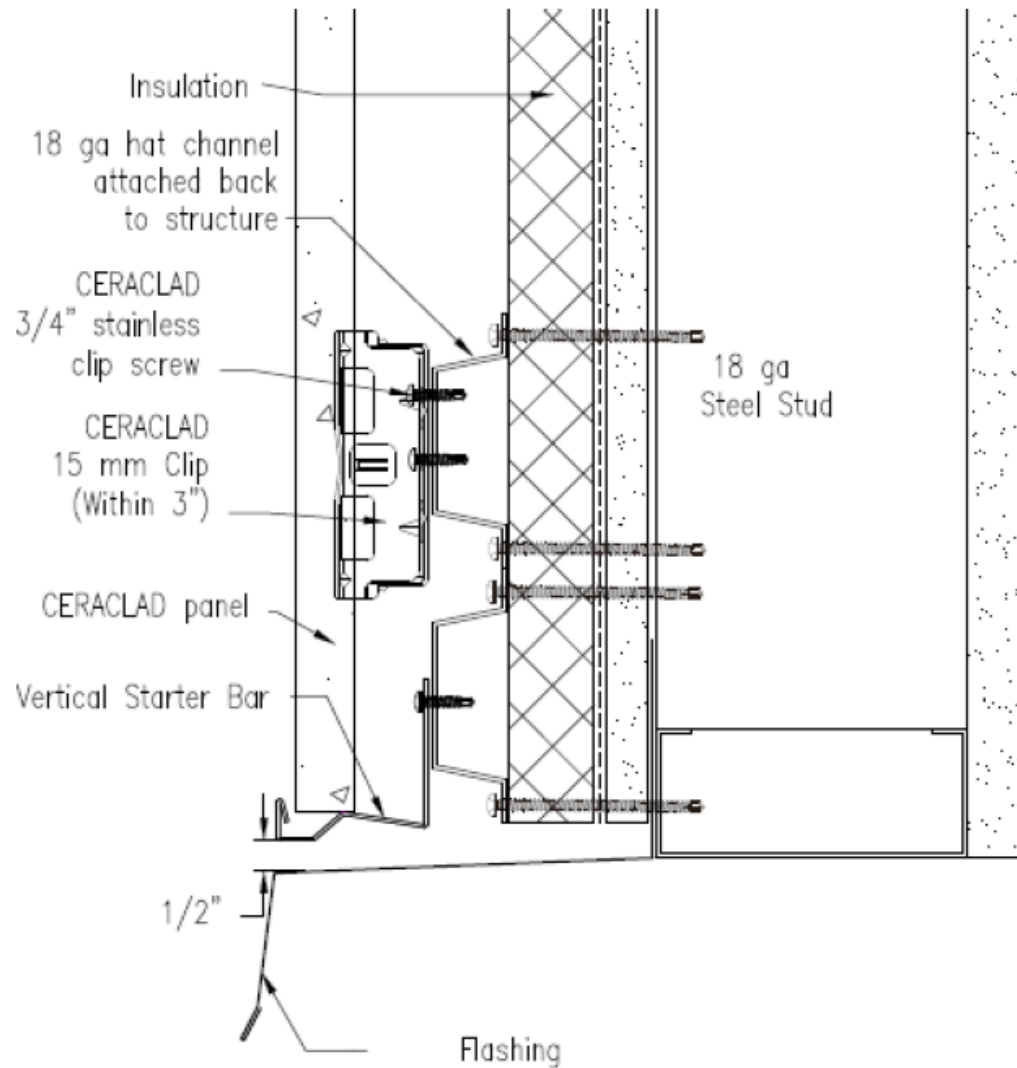
- **Part 9 Buildings**

- CCMC (federal) and BMEC (Ontario) certification: rare and optional. Discussion.
- Same issues as above.



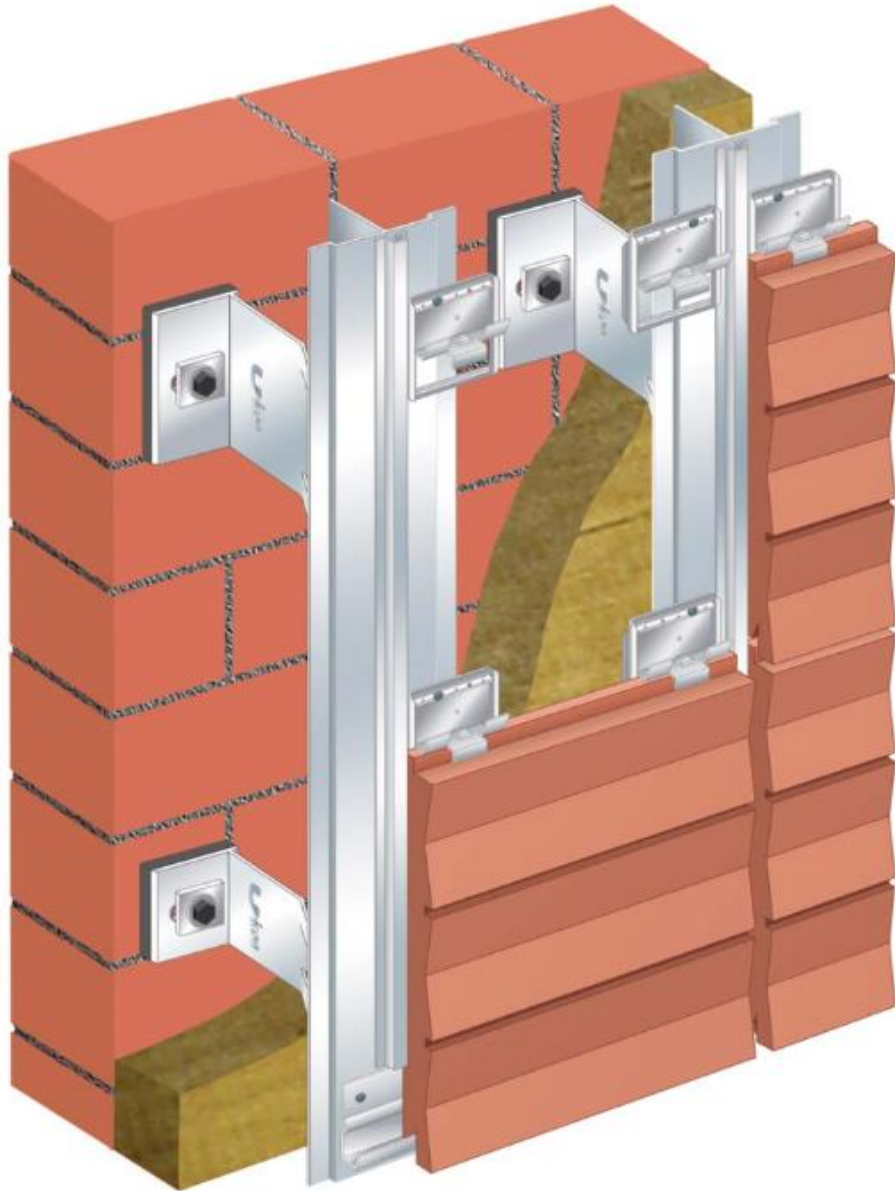
*Leadership = specifiers should insist on working with leading companies who have invested in this, until codes catchup.

Base of Wall Detail (example)



Minimal Insulation

An additional support, or a wider support, is required at the base of the wall to support the Vertical Starter bar and the first clip within 3" of the Starter Bar.

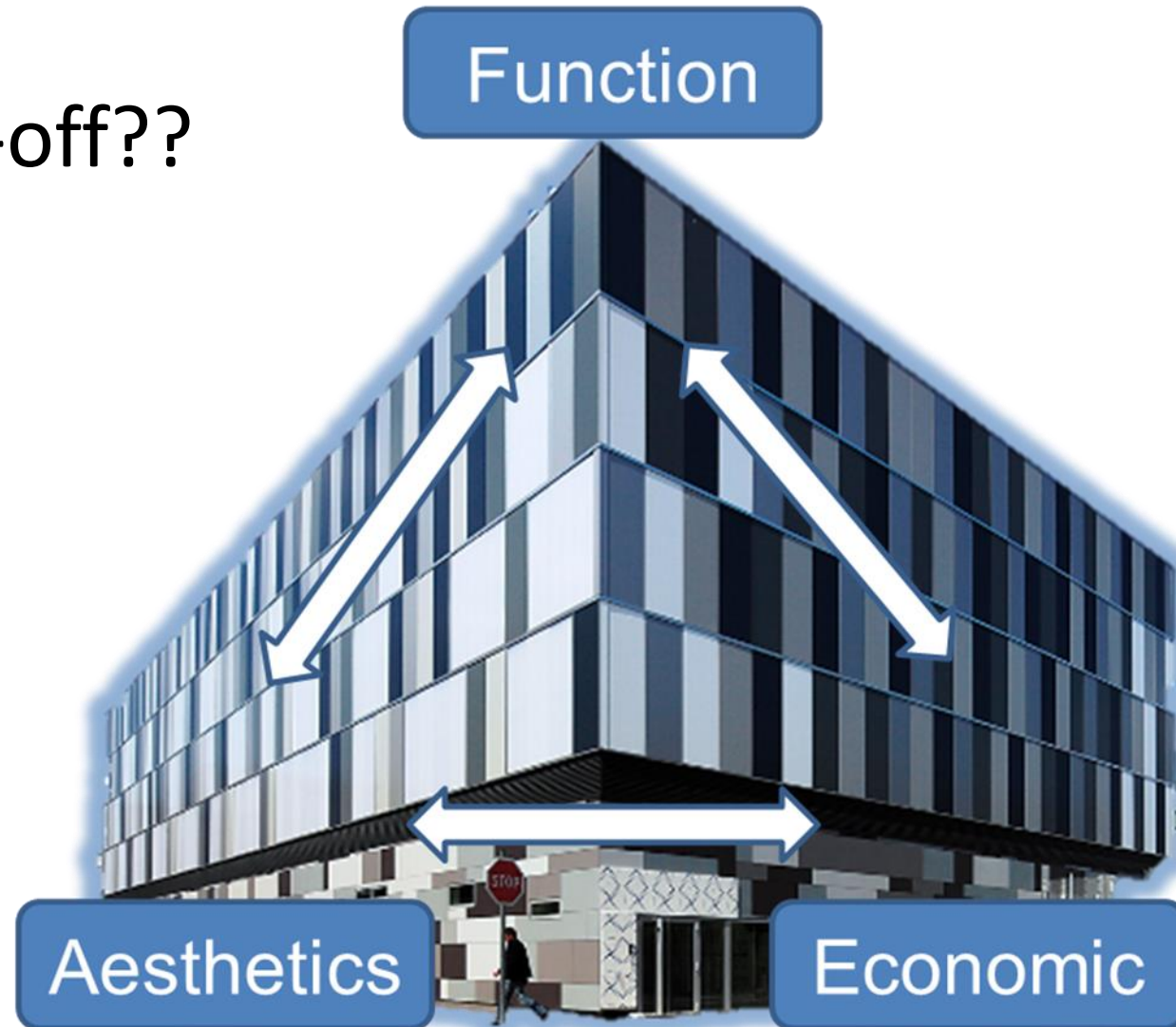


High Effective R Value

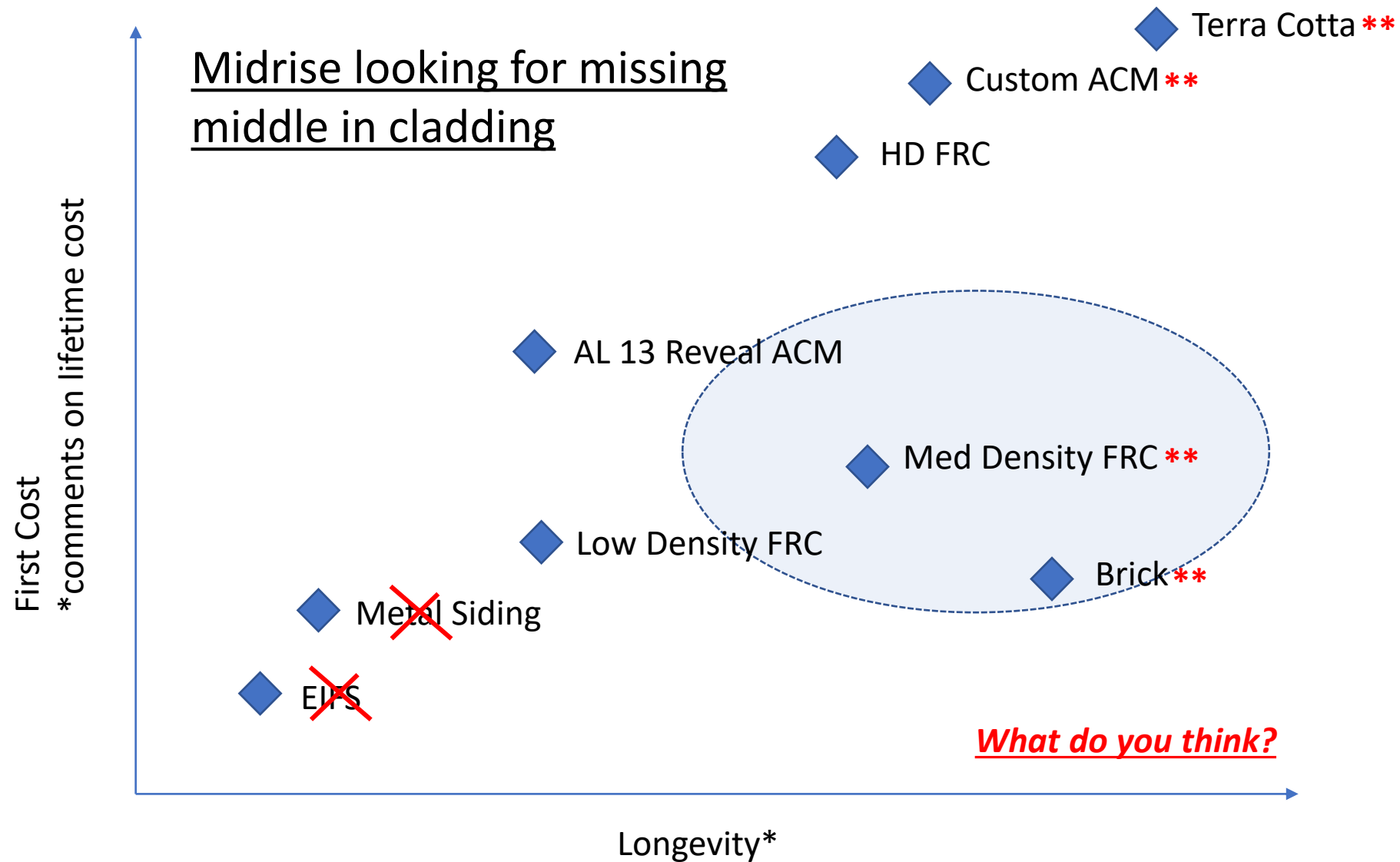
U-Kon Thermally Broken
Systems, Engineering,
Support

Synergy or Trade-off??

- Sustainability
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Conclusion



*Longevity, resilience, colour durability, physical durability = lower maintenance

**High Aesthetic Choice

Resources



C E R A C L A D
Rain Screen Exterior Siding System

Revit upon registration

[Colour and Sample information](#)

[Installation Animation](#)

[Vertical Installation](#)